SCHNEIDER
MESSTECHNIK

IDS 400

Intelligent Electronic Pressure Switch Stainless Steel

Stainless Steel Sensor

accuracy according to IEC 60770:
standard: 0.35 % FSO
option: 0.25 % FSO

Nominal pressure

from 0 ... 100 mbar up to 0 ... 600 bar

Contacts

1 or 2 independent PNP contacts,
freely configurable

Analogue output

2-wire: 4 ... 20 mA
3-wire: 4 … 20 mA / 0 … 10 V
others on request

Special characteristics

- indication of measured values on a 4-digit LED display
- rotatable and configurable display module

Optional versions

- **IS-version**
  Ex ia = intrinsically safe
  for gases and dust
- pressure sensor welded
- customer specific versions

The electronic pressure switch IDS400 is the successful combination of

- intelligent pressure switch
- digital display

and has been specially designed for numerous applications in various industrial sectors.

As standard the IDS400 offers a PNP contact and a display module, which is mounted rotable in the ball housing. Additional optional versions like e.g. an intrinsically safe version, a second contact and an analogue output complete the profile.

Preferred areas of use are

- Plant and Machine Engineering
- Heating and Air Conditioning
- Environmental Engineering
  (water – sewage – recycling)

ICS Schneider Messtechnik GmbH
Briesestraße 59
D-16562 Hohen Neuendorf / OT Bergfelde

Tel.: 03303 / 504066
Fax: 03303 / 504068

info@ics-schneider.de
www.ics-schneider.de

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Input pressure range												
Nominal pressure gauge	[bar]	-1 … 0	0.10	0.16	0.25	0.40	0.60	1	1.6	2.5	4	6
Nominal pressure abs.	[bar]	-	-	-	-	0.40	0.60	1	1.6	2.5	4	6
Overpressure	[bar]	5	0.5	1	1	2	5	5	10	10	20	40
Burst pressure	[bar]	7.5	1.5	1.5	1.5	3	7.5	7.5	15	15	25	50

Nominal pressure gauge / abs.	[bar]	10	16	25	40	60	100	160	250	400	600
Overpressure	[bar]	40	80	80	105	210	210	600	1000	1000	1000
Burst pressure	[bar]	50	120	120	210	420	420	1000	1250	1250	1250
Vacuum resistance		$P_N \geq 1$ bar: unlimited vacuum resistance						$P_N < 1$ bar: on request			

Contact [1]			
Number, type	standard: 1 PNP contact		option: 2 independent PNP contacts
Max. switching current	4 ... 20 mA / 2- and 3-wire: 0 ... 10 V / 3-wire:	contact rating 125 mA, short-circuit resistant; $V_{switch} = V_S - 2V$ contact rating 125 mA, short-circuit resistant	
Accuracy of contacts [2]	≤ ± 0.25 % FSO		
Repeatability	≤ ± 0.1 % FSO		
Switching frequency	2-wire: max. 10 Hz	/	3-wire: 50 Hz
Switching cycles	> 100 x 10^6		
Delay time	0 ... 100 sec		
[1] with IS-protection max. 1 contact possible			
Analogue output (optionally) / Supply			
2-wire current signal	4 ... 20 mA / V_S = 13 ... 36 V_{DC} permissible load: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$		response time: < 10 msec
2-wire current signal with IS-protection	4 ... 20 mA / V_S = 15 ... 28 V_{DC} permissible load: $R_{max} = [(V_S - V_{S\,min}) / 0.02\ A]\ \Omega$		response time: < 10 msec
3-wire current signal	4 ... 20 mA / V_S = 24 V_{DC} ± 10 % adjustable (turn-down of span 1:5) [3] permissible load: R_{max} = 500 Ω		response time: < 30 msec
3-wire voltage signal	0 … 10 V / V_S = 24 V_{DC} ± 10 % adjustable (turn-down of span 1:5) [3] permissible load: R_{min} = 10 kΩ		response time: < 30 msec
Without analogue output	V_S = 15 ... 36 V_{DC}		
Accuracy [2]	standard: nominal pressure < 0,4 bar: ≤ ± 0,5 % FSO nominal pressure ≥ 0,4 bar: ≤ ± 0,35 % FSO option: nominal pressure ≥ 0,4 bar: ≤ ± 0,25 % FSO		
[2] accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability) *[3] with turn-down of span the analogue signal is adjusted automatically to the new measuring range*			

Thermal effects (Offset and Span)				
Nominal pressure P_N	[bar]	-1 … 0	< 0.40	≥ 0.40
Tolerance band	[% FSO]	≤ ± 0.75	≤ ± 1	≤ ± 0.75
in compensated range	[°C]	-20 ... 85	0 ... 70	-20 … 85

Permissible temperatures			
Permissible temperatures	medium: -40 ... 125 °C	electronics / environment: -40 ... 85 °C	storage: -40 ... 100 °C
Electrical protection			
Short-circuit protection	permanent		
Reverse polarity protection	no damage, but also no function		
Electromagnetic compatibility	emission and immunity according to EN 61326		
Mechanical stability			
Vibration	10 g RMS (25 ... 2000 Hz)	according to DIN EN 60068-2-6	
Shock	500 g / 1 msec	according to DIN EN 60068-2-27	
Materials			
Pressure port	stainless steel 1.4404 (316L)		
Housing	stainless steel 1.4404 (316L)		
Viewing glass	laminated safety glass		
Seals (media wetted)	standard: FKM option: welded version [4] on request		others on request
Diaphragm	stainless steel 1.4435 (316 L)		
Media wetted parts	pressure port, seals, diaphragm		
[4] welded version only for pressure ports according to EN 837; possible for nominal pressure ranges $P_N \leq 40$ bar			
Explosion protection (only for 4 … 20 mA / 2-wire)			
Approval AX14-DS 400	IBExU 06 ATEX 1050 X zone 0: II 1G Ex ia IIC T4 Ga (connector) / II 1G Ex ia IIB T4 Ga (cable) zone 20: II 1D Ex ia IIIC T135 °C Da		
Safety techn. maximum values	U_i = 28 V, I_i = 93 mA, P_i = 660 mW, $C_i \approx 0$ pF, $L_i \approx 0$ µH		
Max. switching current [5]	70 mA		
Permissible temperatures for environment	-20 ... 60 °C with p_{atm} 0.8 bar up to 1.1 bar		
Connecting cables (by factory)	cable capacitance: signal line/shield also signal line/signal line: 100 pF/m cable inductance: signal line/shield also signal line/signal line: 1 µH/m		
[5] the real switching current in the application depends on the power supply unit			

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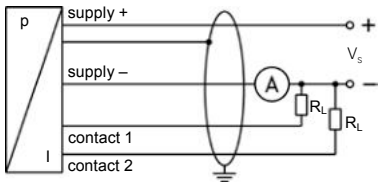
Miscellaneous	
Display	4-digit, 7-segment-LED display, visible range 37.2 x 11 mm; digit height 10 mm, range of indication -1999 ... +9999; accuracy 0.1 % ± 1 digit; digital damping 0.3 … 30 sec (programmable); measured value update 0.0 … 10 sec (programmable)
Current consumption (without contacts)	2-wire signal output current: max. 25 mA 3-wire signal output current: approx. 30 mA + signal current 3-wire signal output voltage: approx. 30 mA
Ingress protection	IP 67
Installation position	any [6]
Weight	approx. 400 g
Operational life	> 100 x 10^6 cycles
CE-conformity	EMC Directive: 2014/30/EU Pressure Equipment Directive: 97/23/EC (module A) [7]
ATEX Directive	94/9/EG

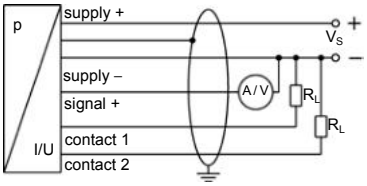
[6] Pressure switches are calibrated in a vertical position with the pressure connection down. If this position is changed on installation there can be slight deviation in the zero point for pressure ranges P_N ± 1 bar.
[7] This directive is only valid for devices with maximum permissible overpressure > 200 bar

Wiring diagrams

2-wire-system (current)

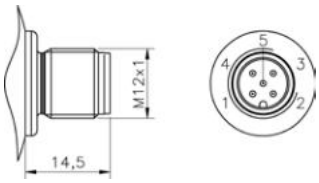


3-wire-system (current / voltage)



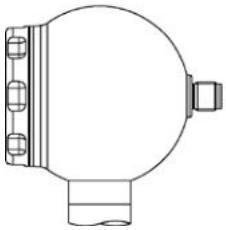
Pin configuration	
Electrical connection	M12x1 metal (5-pin)
Supply + Supply – Signal + (only 3-wire) Contact 1 Contact 2	1 3 2 4 5
Shield	plug housing / pressure port

Electrical connection (dimensions in mm)

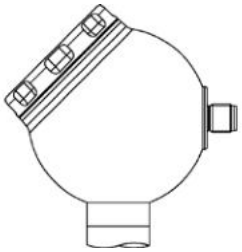


M12x1 (5-pin)

Designs [8]



side display



45° display (on request)

[8] all designs in horizontal rotatable housing as standard

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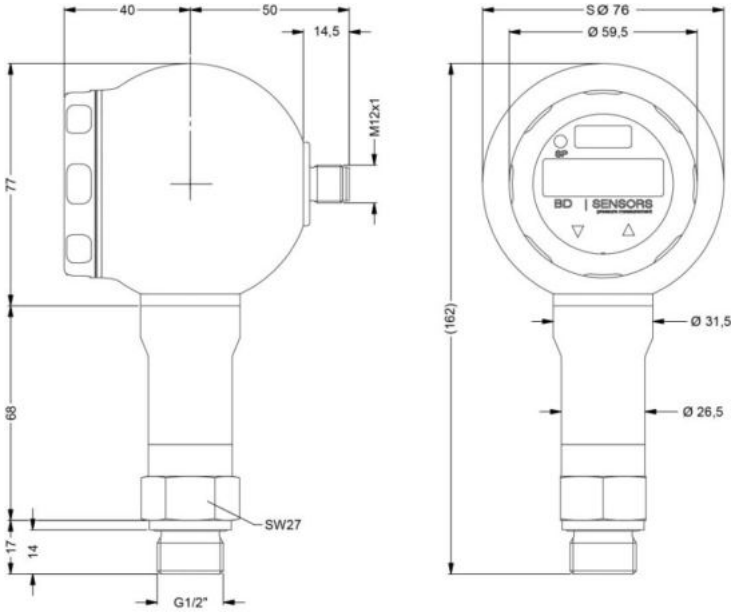
Mechanical connections (dimensions in mm)

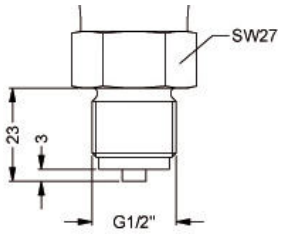
standard



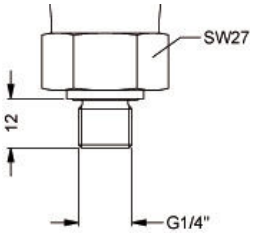
G1/2" DIN 3852

⇨ **for nominal pressure P_N > 400 bar increases the length of devices without IS-vesion by 19 mm and of devices with IS-version by 39 mm**

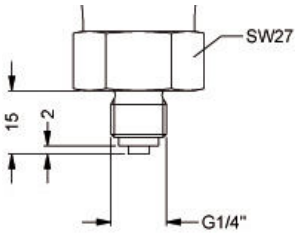
optionally



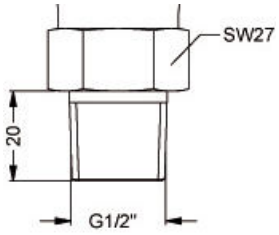
G1/2" EN 837



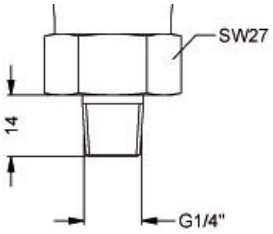
G1/4" DIN 3852



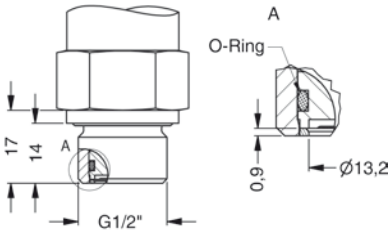
G1/4" EN 837



1/2" NPT



1/4" NPT



G1/2" flush DIN 3852
(P_N from 0.1 up to 40 bar)

⇨ **metric threads and other versions on request**

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Ordering code IDS 400

IDS 400 ☐☐☐-☐☐☐☐-☐☐-☐-☐-☐-☐☐☐-☐☐☐-☐-☐☐☐

Option	Code	Remark
Pressure		
gauge [1]	7A0	
absolute [2]	7A1	
Input [bar]		
0.10 [2]	1000	
0.16 [2]	1600	
0.25 [2]	2500	
0.40	4000	
0.60	6000	
1.0	1001	
1.6	1601	
2.5	2501	
4.0	4001	
6.0	6001	
10	1002	
16	1602	
25	2502	
40	4002	
60	6002	
100	1003	
160	1603	
250	2503	
400	4003	
600	6003	
-1 … 0	X102	
customer	9999	consult
Design		
Stainless steel globe housing (side display)	KH	
Stainless steel globe housing (45° display)	K4	consult
Analogue output		
without	0	
4 … 20 mA / 2-wire	1	
0 … 10 V / 3-wire, adjustable	3	
4 … 20 mA / 3-wire, adjustable	7	
Intrinsic safety 4 … 20 mA / 2-wire [3]	E	
customer	9	consult
Contact		
1 contact	1	
2 contacts [3]	2	
Accuracy		
standard for $P_N \geq 0.4$ bar — 0.35 %	3	
standard for $P_N < 0.4$ bar — 0.5 %	5	
option 1 for $P_N \geq 0.4$ bar — 0.25 %	2	
customer	9	consult
Electrical connection		
Male plug M12x1 (5-pin) / metal version	N11	
customer	999	consult
Mechanical connection		
G1/2" DIN 3852	100	
G1/2" EN 837	200	
G1/4" DIN 3852	300	
G1/4" EN 837	400	
G1/2" DIN 3852 with flush sensor [4]	F00	
1/2" NPT	N00	
1/4" NPT	N40	
customer	999	consult
Seals		
FKM	1	
without (welded version) [5]	2	consult
customer	9	consult
Special version		
standard	000	
customer	999	consult

Prices EXW Thierstein, excluding package

[1] from 60 bar: measurement starts with ambient pressure
[2] absolute pressure possible from 0.4 bar
[3] with Ex version max. 1 contact is possible
[4] only possible for nominal pressure ranges $P_N \leq 40$ bar
[5] welded version only with pressure ports according to EN 837; possible for nominal pressure ranges $P_N \leq 40$ bar